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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/532,827	04/26/2005	Naoki Hase	052478	8889

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WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP		
1250 CONNECTICUT AVENUE, NW		
SUITE 700		
WASHINGTON, DC 20036		

EXAMINER	
GOFF II, JOHN L	

ART UNIT	PAPER NUMBER
1733	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/532,827

Applicant(s)

HASE ET AL.

Examiner

John L. Goff

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to the amendment filed on 4/9/07.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
4. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hase et al. (WO 01/32418 with U.S. Patent 7,101,455 used as a translation) in view of Iizuka et al. (JP 2002172639 and see also the machine translation) and/or Okochi et al. (JP 04080348 and see also the abstract).

Hase et al. disclose a method of producing a laminate without wrinkles suitable for use as a circuit board comprising providing a heat-resistant film including a resin containing a thermal fusible component (2 of Figure 1(a)), providing upper and lower metallic foils (1 of Figure 1(a)) (e.g. copper or steel), providing protective materials (3 of Figure 1(a)), laminating the film, foils,

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and protective materials by pressing the substrates in a heated roll laminating apparatus (4 of Figure 1(a)) operated at 200 °C or higher to form a laminate (6 of Figure 1(a)) of the film bonded to the foils and the protective materials slightly contacted with the laminate, cooling the laminate, and removing the protective materials from the laminate (8 of Figure 1(a)) (Figure 1(a) and Column 4, lines 13-19 and Column 8, lines 16-39 and Column 11, lines 39-61). Hase et al. are silent as to controlling the temperature in a width direction of the laminate in a cooling process after the lamination so that the temperature of the ends, i.e. lateral edges, of the laminate are the same as or higher than that of the center portion, it being noted Hase et al. teach the cooling may be performed by contacting the laminate with a substrate of lower temperature (Column 8, lines 29-39). Iizuka et al. disclose a method of producing a laminate without wrinkles suitable for use as a circuit board comprising providing a layup of a resin layer sandwiched between metallic foils (e.g. copper foils), laminating the layup by pressing the layup at a laminating temperature, and cooling the laminate by contacting the laminate with a cooling substrate which provides more cooling at the center of the laminate and less cooling at the ends of the laminate, i.e. controlling the temperature in a width direction of the laminate so that the temperature at the ends of the laminate is higher than that of the center portion in the cooling process, to prevent the laminate from wrinkling during cooling (Figures 1(a) and 1(c) and Paragraphs 2, 7, 9, 10, and 15). Furthermore, it is well taken in the art of cooling a heated metallic sheet, e.g. steel, by contacting the sheet with a cooling substrate that cooling is performed by controlling the temperature in a width direction of the laminate to provide more cooling at the center of the sheet and less cooling at the ends of the sheet so that the temperature at the center of the sheet is lower than the temperature at the ends of the sheet to prevent the

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sheet from wrinkling as shown by Okochi et al. wherein the temperature difference between the center and ends of the sheet is 30 to 60 °C (See the abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to cool the laminate including metallic foils as taught by Hase et al. by contacting the laminate with a cooling substrate that controls the temperature in a width direction of the laminate by providing more cooling to the center of the laminate and less cooling to the ends, i.e. lateral edges, of the laminate, i.e. the temperature of the ends of the laminate is the higher than that of the center portion in the cooling process, as shown by both Iizuka et al. and/or Okochi et al. to ensure the laminate is formed without wrinkles.

Regarding claim 2, as to the temperature of the ends of the laminate being 40 °C higher than the center of the laminate, absent any unexpected results it would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the temperature difference between the ends and center of the laminate taught by Hase et al. as modified by Iizuka et al. and/or Okochi et al. as a function of preventing wrinkling in the laminate as doing so would have required nothing more than ordinary skill and routine experimentation, it being noted Okochi et al. specifically suggest this difference is within the range of 30 to 60 °C.

Regarding claim 5, Hase et al. teach the heat-resistant film may comprise a multilayer of a non-thermoplastic polyimide film having thermoplastic polyimide layers, i.e. a resin containing a thermally fusible component, provided on upper and lower surfaces thereof (Column 11, lines 39-61).

Regarding claim 6, Hase et al. teach the thermally fusible component of the heat-resistant film contains a thermoplastic polyimide in an amount of 50% by weight or more based on 100% by weight of the thermally fusible component (Column 5, lines 46-49).

Regarding claim 7, Hase et al. teach the metallic foil may comprise a copper foil having a thickness of 50 μm or less (Column 13, lines 24-30).

Regarding claim 8, Hase et al. teach the protective material may comprise a heat resistant polyimide film which is considered a non-thermoplastic polyimide film (Column 10, lines 1-10 and Column 11, lines 39-61 and Column 26, lines 49-50).

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 1, 2, and 5-8 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4 of U.S. Patent No. 7,101,455 in view of Iizuka et

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al. and/or Okochi et al. Claims 1-4 of U.S. Patent No. 7,101,455 fully encompass claims 1, 2, and 5-8 of the instant application except for a teaching of controlling the temperature in a width direction of the laminate in a cooling process such that the temperature of the ends of the laminate is the same as or higher than that of the center portion which is obvious in view of Iizuka et al. and/or Okochi et al. as described above. Regarding claim 7, claims 1-4 of U.S. Patent No. 7,101,455 are silent as to the metal comprising copper foil. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use as the metal layer in claims 1-4 of U.S. Patent No. 7,101,455 a copper foil as was the preferred metal layer for forming a substrate useful as a circuit board as shown by Iizuka et al. wherein absent any unexpected results it would have been obvious to one of ordinary skill in the art to determine the specific thickness of the foil as a function of the specific use of the circuit board as doing so would have required nothing more than ordinary skill and routine experimentation.

7. Claims 3 and 4 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4 of U.S. Patent No. 7,101,455, Iizuka et al., and/or Okochi et al. as applied to claims 1, 2, and 5-8 above, and further in view of Tokabayashi et al. (JP 04033848). Claims 1-4 of U.S. Patent No. 7,101,455, Iizuka et al., and/or Okochi et al. as described above fully encompass claims 3 and 4 except for a specific teaching of using a heated roll laminating apparatus as the thermal-press forming device. Tokabayashi et al. are exemplary of laminating copper foils and a heat-resistant film in the formation of a circuit board wherein the foils and film are laminated in a heated roll laminating apparatus (See the abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use as the thermal-press forming device taught by claims 1-4 of U.S. Patent No. 7,101,455 as

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modified by Iizuka et al., and/or Okochi et al. a heated roll laminating apparatus as shown by Tokabayashi et al. to continuously form the laminate.

Response to Arguments

8. Applicant's arguments with respect to claims 1-8 have been considered but are moot in view of the new ground(s) of rejection.

In view of applicants amendment the previous 35 USC 102 rejection over Hase et al. is withdrawn. Applicants statement of common ownership between the present application and U.S. Patent 7,101,455 is acknowledged.

Applicants argue, "As stated at col. 4 of Hase, it is an object of Hase "to provide a method and a device for producing a heat resistant-flexible laminate which is capable of being uniformly heated and pressurized at the time of thermal-press forming." To a person of ordinary skill in the art, a uniformly heated laminate is also cooled down uniformly in the course of natural cooling."

There is no teaching in Hase et al. that the laminate is "cooled down uniformly in the course of natural cooling". Hase et al. does not teach away from "controlling the temperature in a width direction of the laminate in a cooling process after the lamination so that the temperature of the ends of the laminate is the same as or higher than that of the center portion" which is taught by Hase et al. as modified by Iizuka et al. and Okochi et al.

Applicants further argue, "Iizuka does not disclose controlling the temperature of a laminate after the lamination. Because the lamination disclosed in Iizuka consists of heating, pressurizing and cooling plural laminates, the cooling process disclosed in Iizuka is performed in

the lamination process, not after the lamination. Additionally, Iizuka is silent about the significance of the temperature after the lamination. Thus, Iizuka does not disclose controlling the temperature in a width direction of the laminate in a cooling process after the lamination so that the temperature of the ends of the laminate is the same as or higher than that of the center portion.”.

Iizuka et al. teach cooling a laminate, i.e. the product of a heat lamination process analogous to the laminate taught by Hase et al., including metallic foils by contacting the laminate with a cooling substrate having a temperature gradient which provides more cooling at the center of the laminate and less cooling at the ends of the laminate, i.e. controlling the temperature in a width direction of the laminate so that the temperature at the ends of the laminate is higher than that of the center portion in the cooling process, to prevent the laminate from wrinkling during cooling.

Applicants further argue, “In Okochi the preferable cooling measure is that the temperature at the center of the steel sheet is at most 60 °C lower than the both ends and at most 30 °C higher than the both ends. This means that Okochi discloses that the temperature at the ends should be -30°C to about +60°C higher than the center. Such a temperature range extended across 0° C does not provide any direction for the present invention. Thus, Okochi does not disclose controlling the temperature in a width direction of the laminate in a cooling process after the lamination so that the temperature of the ends of the laminate is the same as or higher than that of the center portion.”

Okochi et al. disclose cooling a metal sheet by controlling the temperature in a width direction of the sheet such that the temperature at the center of the sheet is lower than the

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temperature at the sides of the sheet by 30 to 60 °C to prevent the sheet from wrinkling wherein as both Hase et al. and Okochi et al. are directed to cooling a metal sheet both are considered analogous and combinable as set forth above.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **John L. Goff** whose telephone number is **(571) 272-1216**. The examiner can normally be reached on M-F (7:15 AM - 3:45 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



John L. Goff
Primary Examiner
Art Unit 1733